

April 25, 2000

The Honorable Carolyn L. Huntoon
Assistant Secretary for
Environmental Management
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0113

Dear Dr. Huntoon:

The Defense Nuclear Facilities Safety Board (Board) has been reviewing activities concerning operation of the plutonium stabilization and packaging system (PuSPS) at the Rocky Flats Environmental Technology Site (RFETS). The enclosed report on this subject, prepared by the Board's staff, is forwarded for your consideration and action as appropriate.

The potential for contamination on the PuSPS containers has been an ongoing topic of discussion for the past several months. The actions taken at RFETS to control contamination represent a reasonable approach to help minimize this potential. As briefed to the Board in January 2000, the Department of Energy (DOE) has not yet decided whether to relax the contamination requirements in the long-term plutonium storage standard, DOE-STD-3013-99, *Stabilization, Packaging, and Storage of Plutonium-Bearing Materials*. However, DOE has committed to briefing the Board once a decision has been made.

Please inform the Board of your path forward to address the concerns noted in the enclosed report.

Sincerely,

John T. Conway
Chairman

c: Mr. Paul Golan
Mr. Mark B. Whitaker, Jr.

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

March 27, 2000

MEMORANDUM FOR: J. K. Fortenberry, Technical Director

COPIES: Board Members

FROM: R. E. Kasdorf

SUBJECT: Plutonium Stabilization and Packaging System at Rocky Flats
Environmental Technology Site

This report documents an issue reviewed by the staff of the Defense Nuclear Facilities Safety Board (Board) concerning operation of the plutonium stabilization and packaging system (PuSPS) at the Rocky Flats Environmental Technology Site (RFETS). The review was conducted by staff members R. E. Kasdorf, J. W. Troan, and D. J. Grover on March 2, 2000.

Background. The Department of Energy (DOE) procured a prototype PuSPS, developed by British Nuclear Fuels Limited, to package RFETS's inventory of plutonium metal and oxide to meet the long-term plutonium storage standard, DOE-STD-3013-99, *Stabilization, Packaging, and Storage of Plutonium-Bearing Materials*. After stabilization, material is to be packaged into inner and outer welded containers. A requirement of the standard is that the outside of the inner container meet the removable contamination limits of 10 CFR Part 835. RFETS has requested that this requirement be relaxed, but in parallel has initiated actions to minimize the potential for such contamination.

Contamination Control in PuSPS. Contamination could be deposited on the outside of the inner container should contamination trapped between the inner container and bung (lid) be released during laser cutting of the inner container weld. Maintaining cleanliness of the weld area would help minimize the potential for contaminating the inner container. RFETS has initiated or will take the following actions to control contamination in the PuSPS:

- Three electrophoresis units will be added to the gloveboxes used for filling the convenience cans, which will subsequently be placed into the inner containers. These units will remove airborne contamination electrostatically.
- Gloveboxes will be wiped down every third shift during operations.
- A local ventilation source will be added to the welding area to remove soot and contamination during welding and cutting of the inner container welds.
- A ring of alpha detectors will be added to the welding fumehood to detect alpha

contamination. The inner containers will pass through this ring. RFETS expects that these detectors will be able to detect a minimum alpha contamination of about 200 disintegrations per minute per 100 square centimeters, an order of magnitude greater than the maximum allowed by the standard.

These actions are a reasonable approach to control the contamination on the outside of the inner containers.

During discussions, RFETS representatives noted that the gloveboxes used to put the convenience cans into the inner containers will be maintained at a higher pressure (about 1 inch water gage) than the adjacent welding fumehood. This differential pressure is apparently needed to obtain a satisfactory inner container weld. However, this pressure differential is contrary to the system design requirements and will tend to push contamination out of the glovebox through the sphincter seal to a lesser or noncontaminated area. The staff believes this departure from the system design requirements needs to be reevaluated, especially in light of efforts to minimize contamination in the welding fumehood. A potential compensatory action would be to establish the higher pressure only during the short periods of time when welding is actually being performed.

Additionally, the staff believes that it would be advisable to establish a contamination area around the welding fumehood and turntable area until it can be demonstrated that these areas and the containers are not becoming contaminated above the removable surface contamination limits of 10 CFR Part 835. It may also be prudent to provide a continuous alpha air monitor near these areas.

Operational Readiness. During the review, RFETS informed the staff that the startup of the PuSPS had been delayed until this summer. The site had planned to start the metal packaging portion of the system in January 2000 (a commitment under the Board's Recommendation 94-1, *Improved Schedule for Remediation*). Problems with the inner can welding, which were recently resolved, delayed this startup. The site now plans to conduct a combined startup for metal packaging and oxide stabilization and packaging. The delay will allow the site time to complete installation of the stabilization furnaces, as well as the contamination control modifications discussed above.

DOE's Rocky Flats Field Office has not yet decided on the type of readiness review to be conducted. The Board's staff believes that an Operational Readiness Review is required by DOE Order 425.1, *Startup and Restart of Nuclear Facilities*. The PuSPS is a substantial modification requiring changes to the facility's authorization basis. The readiness review needs to be appropriately graded as allowed by the Order, considering that the activity is not particularly complex or overly hazardous.